



## SEQUENCE LISTING

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<120> C-TERMINAL REGION OF AGOUTI-RELATED  
TRANSCRIPT (ART) PROTEIN

<130> 20146P

<140> 09/581,894

<141> 2000-08-21

<150> PCT/US98/26457

<151> 1998-12-11

<150> 60/069,747

<151> 1997-12-16

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Gln	Asp	Arg	Glu	Pro	Arg	Ser	Ser	Arg	Arg	Cys	Val	Arg	Leu	His	Glu
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Tyr	Cys	Arg	Phe	Phe	Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	Thr
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Ala	Met	Asn	Pro	Cys	Ser	Arg	Thr	Leu	Val	Pro	Arg	Gly	Ser	Glu	Gln
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Lys	Leu	Ile	Ser	Glu	Glu	Asp	Leu	Asn	Leu	Arg	Arg	Ala	Ser	Leu	Gly
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TECH CENTER 1600/2900

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Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Pro Cys
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Ser Arg Thr Leu Val Pro Arg Gly Ser Gly Ser Glu Leu Gly Thr Lys
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Val Asp His His His His His His
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Arg Ser Ser Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln
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Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe Phe
          50          55          60
Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Pro Cys
65          70          75          80
Ser Arg Thr Leu Val Pro Arg Gly Ser Gly Ser Leu Arg Arg Ala Ser
          85          90          95
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Ala Val Asp His His His His His His
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Arg Pro Asp Gln Ala Leu Leu Pro Glu Leu Pro Gly Leu Gly Leu Arg
          35          40          45
Ala Pro Leu Lys Lys Thr Asn Ala Glu Gln Ala Glu Glu Asp Leu Leu
          50          55          60
Gln Glu Ala Gln Ala Leu Ala Glu Val Leu Asp Leu Gln Asp Arg Glu
65          70          75          80
Pro Arg Ser Ser Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly
          85          90          95
Gln Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe
          100          105          110
Phe Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Pro
          115          120          125
Cys Ser Arg Thr Leu Val Pro Arg Gly Ser Gly Ser Ile Ile Pro Val
          130          135          140
Glu Glu Glu Asn Pro Asp Phe Trp Asn Arg Gln Ala Ala Glu Ala Leu
145          150          155          160
Gly Ala Ala Lys Lys Leu Gln Pro Ala Gln Thr Ala Ala Lys Asn Leu
          165          170          175
Ile Ile Phe Leu Gly Asp Gly Met Gly Val Ser Thr Val Thr Ala Ala
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Val	Asp	Lys	His	Val	Pro	Asp	Ser	Gly	Ala	Thr	Ala	Thr	Ala	Tyr	Leu
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Cys	Gly	Val	Lys	Gly	Asn	Phe	Gln	Thr	Ile	Gly	Leu	Ser	Ala	Ala	Ala
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Thr	Arg	Val	Gln	His	Ala	Ser	Pro	Ala	Gly	Ala	Tyr	Ala	His	Thr	Val
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Asn	Arg	Asn	Trp	Tyr	Ser	Asp	Ala	Asp	Val	Pro	Ala	Ser	Ala	Arg	Gln
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Pro	Asp	Pro	Glu	Tyr	Pro	Asp	Asp	Tyr	Ser	Gln	Gly	Gly	Thr	Arg	Leu
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Asp	Gly	Lys	Asn	Leu	Val	Gln	Glu	Trp	Leu	Ala	Lys	His	Gln	Gly	Ala
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Ser	Val	Thr	His	Leu	Met	Gly	Leu	Phe	Glu	Pro	Gly	Asp	Met	Lys	Tyr
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Glu	Ile	His	Arg	Asp	Ser	Thr	Leu	Asp	Pro	Ser	Leu	Met	Glu	Met	Thr
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Glu	Ala	Ala	Leu	Arg	Leu	Leu	Ser	Arg	Asn	Pro	Arg	Gly	Phe	Phe	Leu
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Ala	Gly	Gln	Leu	Thr	Ser	Glu	Glu	Asp	Thr	Leu	Ser	Leu	Val	Thr	Ala
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Asp	His	Ser	His	Val	Phe	Ser	Phe	Gly	Gly	Tyr	Pro	Leu	Arg	Gly	Ser
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Ser	Ile	Phe	Gly	Leu	Ala	Pro	Gly	Lys	Ala	Arg	Asp	Arg	Lys	Ala	Tyr
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Gln	Gln	Ser	Ala	Val	Pro	Leu	Asp	Gly	Glu	Thr	His	Ala	Gly	Glu	Asp
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Val	Ala	Val	Phe	Ala	Arg	Gly	Pro	Gln	Ala	His	Leu	Val	His	Gly	Val
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Glu	Pro	Tyr	Thr	Ala	Cys	Asp	Leu	Ala	Pro	Ser	Ala	Gly	Thr	Thr	Asp
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Ala	Ala	His	Pro	Gly	Lys	Leu	Gly	Pro	Glu	Gln	Lys	Leu	Ile	Ser	Glu
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&lt;213&gt; Human

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Ala	Pro	Leu	Lys	Lys	Thr	Asn	Ala	Glu	Gln	Ala	Glu	Glu	Asp	Leu	Leu
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Gln	Glu	Ala	Gln	Ala	Leu	Ala	Glu	Val	Leu	Asp	Leu	Gln	Asp	Arg	Glu
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Pro	Arg	Ser	Ser	Arg	Arg	Cys	Val	Arg	Leu	His	Glu	Ser	Cys	Leu	Gly
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Gln	Gln	Val	Pro	Cys	Cys	Asp	Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe
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Thr	Ala	Gly	Glu	Gln	Leu	His	Arg	Ala	Ile	Ser	Arg	Tyr	Ala	Ala	Val
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Tyr	Lys	Glu	Phe	Leu	Asp	Val	Thr	Cys	Arg	Leu	Ala	Glu	Ala	Met	Lys
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Ala	Thr	Ala	Pro	Thr	Asn	Asp	Ile	Tyr	Asn	Glu	Arg	Glu	Leu	Tyr	Asn
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Ser	Leu	Ser	Ile	Ser	Gln	Pro	Thr	Val	Val	Phe	Thr	Ser	Arg	Asn	Ser
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Gln	Ile	Ile	Pro	Asp	Thr	Thr	Ile	Leu	Cys	Ala	Val	Pro	Phe	His	His
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Val	Val	Leu	Met	Tyr	Arg	Phe	Asn	Glu	His	Leu	Phe	Leu	Gln	Thr	Leu
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Phe	Leu	Ala	Lys	Asn	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser	Asn	Leu
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His	Glu	Ile	Ala	Ser	Gly	Gly	Ala	Pro	Leu	Ser	Lys	Glu	Ile	Ser	Glu
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Ile	Ala	Ala	Lys	Arg	Phe	Lys	Leu	Pro	Gly	Ile	Arg	Gln	Gly	Tyr	Gly

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					485					490					495	
Lys	Leu	Gly	Ala	Val	Gly	Lys	Val	Val	Val	Pro	Phe	Tyr	Ser	Leu	Lys	Val
			500					505						510		
Leu	Asp	Leu	Asn	Thr	Gly	Lys	Lys	Leu	Gly	Pro	Asn	Glu	Arg	Gly	Glu	
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Ile	Cys	Phe	Lys	Gly	Pro	Met	Ile	Met	Lys	Gly	Tyr	Ile	Asn	Asn	Pro	
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Glu	Ala	Thr	Arg	Glu	Leu	Ile	Asp	Glu	Glu	Gly	Trp	Ile	His	Ser	Gly	
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Asp	Ile	Gly	Tyr	Phe	Asp	Glu	Asp	Gly	His	Val	Tyr	Ile	Val	Asp	Arg	
				565					570					575		
Leu	Lys	Ser	Leu	Ile	Lys	Tyr	Lys	Gly	Tyr	Gln	Val	Pro	Pro	Ala	Glu	
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Leu	Glu	Ala	Leu	Leu	Leu	Gln	His	Pro	Phe	Ile	Glu	Asp	Ala	Gly	Val	
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Ala	Gly	Val	Pro	Asp	Glu	Val	Ala	Gly	Asp	Leu	Pro	Gly	Ala	Val	Val	
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Val	Leu	Lys	Glu	Gly	Lys	Ser	Ile	Thr	Glu	Lys	Glu	Ile	Gln	Asp	Tyr	
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Val	Ala	Gly	Gln	Val	Thr	Ser	Ser	Lys	Lys	Leu	Arg	Gly	Gly	Val	Glu	
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Phe	Val	Lys	Glu	Val	Pro	Lys	Gly	Phe	Thr	Gly	Lys	Ile	Asp	Thr	Arg	
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Lys	Ile	Lys	Glu	Ile	Leu	Ile	Lys	Ala	Gln	Lys	Gly	Lys	Ser	Lys	Ser	
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Lys	Ala	Lys	Leu	Gly	Pro	Glu	Gln	Lys	Leu	Ile	Ser	Glu	Glu	Asp	Leu	
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Gln	Val	Pro	Cys	Cys	Asp	Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe	Phe	
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Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	Thr	Ala	Met	Asn	Pro	Cys	
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Ser	Arg	Thr														

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			20					25				30				
Cys	Tyr	Cys	Arg	Phe	Phe	Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	

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 Arg Ser Pro Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln  
 35 40 45  
 Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe Phe  
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 Ser Arg Thr

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 Thr Ala Met Asn Leu Cys Ser Arg Thr  
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 Gln Asn Arg Glu Ser Arg Ser Pro Arg Arg Cys Val Arg Leu His Glu  
 35 40 45  
 Ser Cys Leu Gly Gln Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys  
 50 55 60  
 Tyr Cys Arg Phe Phe Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr  
 65 70 75 80  
 Ala Met Asn Leu Cys Ser Arg Thr Leu Val Pro Arg Gly Ser Glu Gln  
 85 90 95  
 Lys Leu Ile Ser Glu Glu Asp Leu Asn Leu Arg Arg Ala Ser Leu Gly  
 100 105 110  
 His His His His His His  
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 Arg Ser Pro Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln  
 35 40 45  
 Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe Phe  
 50 55 60  
 Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Leu Cys  
 65 70 75 80  
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 85 90 95  
 Glu Asp Leu Asn Leu Arg Arg Ala Ser Leu Ser His His His His His  
 100 105 110  
 His

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 Arg Ser Pro Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln  
 35 40 45  
 Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe Phe  
 50 55 60  
 Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Leu Cys  
 65 70 75 80  
 Ser Arg Thr Leu Val Pro Arg Gly Ser Gly Ser Leu Arg Arg Ala Ser  
 85 90 95  
 Leu Gly Lys Leu Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn His  
 100 105 110  
 His His His His His  
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 Arg Pro Asp Gln Ala Leu Phe Pro Glu Phe Pro Gly Leu Ser Leu Asn  
 35 40 45  
 Gly Leu Lys Lys Thr Asn Ala Asp Arg Ala Glu Glu Val Leu Leu Gln  
 50 55 60  
 Lys Ala Glu Ala Leu Ala Glu Val Leu Asp Pro Gln Asn Arg Glu Ser  
 65 70 75 80  
 Arg Ser Pro Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln

				85				90					95				
Gln	Val	Pro	Cys	Cys	Asp	Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe	Phe		
			100					105					110				
Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	Thr	Ala	Met	Asn	Leu	Cys		
		115					120					125					
Ser	Arg	Thr	Ile	Ile	Pro	Val	Glu	Glu	Asn	Pro	Asp	Phe	Trp	Asn			
	130					135				140							
Arg	Gln	Ala	Ala	Glu	Ala	Leu	Gly	Ala	Ala	Lys	Lys	Leu	Gln	Pro	Ala		
145					150					155					160		
Gln	Thr	Ala	Ala	Lys	Asn	Leu	Ile	Ile	Phe	Leu	Gly	Asp	Gly	Met	Gly		
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Val	Ser	Thr	Val	Thr	Ala	Ala	Arg	Ile	Leu	Lys	Gly	Gln	Lys	Lys	Asp		
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Lys	Leu	Gly	Pro	Glu	Thr	Phe	Leu	Ala	Met	Asp	Arg	Phe	Pro	Tyr	Val		
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Ala	Leu	Ser	Lys	Thr	Tyr	Ser	Val	Asp	Lys	His	Val	Pro	Asp	Ser	Gly		
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Ala	Thr	Ala	Thr	Ala	Tyr	Leu	Cys	Gly	Val	Lys	Gly	Asn	Phe	Gln	Thr		
225					230					235					240		
Ile	Gly	Leu	Ser	Ala	Ala	Ala	Arg	Phe	Asn	Gln	Cys	Asn	Thr	Thr	Arg		
				245					250					255			
Gly	Asn	Glu	Val	Ile	Ser	Val	Met	Asn	Arg	Ala	Lys	Lys	Ala	Gly	Lys		
			260					265					270				
Ser	Val	Gly	Val	Val	Thr	Thr	Thr	Arg	Val	Gln	His	Ala	Ser	Pro	Ala		
		275					280					285					
Gly	Ala	Tyr	Ala	His	Thr	Val	Asn	Arg	Asn	Trp	Tyr	Ser	Asp	Ala	Asp		
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Val	Pro	Ala	Ser	Ala	Arg	Gln	Glu	Gly	Cys	Gln	Asp	Ile	Ala	Thr	Gln		
305					310					315					320		
Leu	Ile	Ser	Asn	Met	Asp	Ile	Asp	Val	Ile	Leu	Gly	Gly	Gly	Arg	Lys		
			325					330						335			
Tyr	Met	Phe	Pro	Met	Gly	Thr	Pro	Asp	Pro	Glu	Tyr	Pro	Asp	Asp	Tyr		
			340					345					350				
Ser	Gln	Gly	Gly	Thr	Arg	Leu	Asp	Gly	Lys	Asn	Leu	Val	Gln	Glu	Trp		
		355					360					365					
Leu	Ala	Lys	His	Gln	Gly	Ala	Arg	Tyr	Val	Trp	Asn	Arg	Thr	Glu	Leu		
	370					375					380						
Met	Gln	Ala	Ser	Leu	Asp	Pro	Ser	Val	Thr	His	Leu	Met	Gly	Leu	Phe		
385					390					395					400		
Glu	Pro	Gly	Asp	Met	Lys	Tyr	Glu	Ile	His	Arg	Asp	Ser	Thr	Leu	Asp		
				405					410					415			
Pro	Ser	Leu	Met	Glu	Met	Thr	Glu	Ala	Ala	Leu	Arg	Leu	Leu	Ser	Arg		
			420				425						430				
Asn	Pro	Arg	Gly	Phe	Phe	Leu	Phe	Val	Glu	Gly	Gly	Arg	Ile	Asp	His		
		435					440					445					
Gly	His	His	Glu	Ser	Arg	Ala	Tyr	Arg	Ala	Leu	Thr	Glu	Thr	Ile	Met		
	450					455					460						
Phe	Asp	Asp	Ala	Ile	Glu	Arg	Ala	Gly	Gln	Leu	Thr	Ser	Glu	Glu	Asp		
465					470					475					480		
Thr	Leu	Ser	Leu	Val	Thr	Ala	Asp	His	Ser	His	Val	Phe	Ser	Phe	Gly		
				485					490					495			
Gly	Tyr	Pro	Leu	Arg	Gly	Ser	Ser	Ile	Phe	Gly	Leu	Ala	Pro	Gly	Lys		
			500					505					510				
Ala	Arg	Asp	Arg	Lys	Ala	Tyr	Thr	Val	Leu	Leu	Tyr	Gly	Asn	Gly	Pro		
		515					520					525					
Gly	Tyr	Val	Leu	Lys	Asp	Gly	Ala	Arg	Pro	Asp	Val	Thr	Glu	Ser	Glu		
	530					535					540						
Ser	Gly	Ser	Pro	Glu	Tyr	Arg	Gln	Gln	Ser	Ala	Val	Pro	Leu	Asp	Gly		
545					550					555					560		
Glu	Thr	His	Ala	Gly	Glu	Asp	Val	Ala	Val	Phe	Ala	Arg	Gly	Pro	Gln		
				565					570					575			
Ala	His	Leu	Val	His	Gly	Val	Gln	Glu	Gln	Thr	Phe	Ile	Ala	His	Val		



Met	Ala	Phe	Ala	Ala	Cys	Leu	Glu	Pro	Tyr	Thr	Ala	Cys	Asp	Leu	Ala
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Pro	Ser	Ala	Gly	Thr	Thr	Asp	Ala	Ala	His	Pro	Gly				
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<210> 14  
 <211> 683  
 <212> PRT  
 <213> Mouse

<400> 14

Met	Leu	Thr	Ala	Met	Leu	Leu	Ser	Cys	Val	Leu	Leu	Leu	Ala	Leu	Pro
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Pro	Thr	Leu	Gly	Val	Gln	Met	Gly	Val	Ala	Pro	Leu	Lys	Gly	Ile	Arg
			20					25					30		
Arg	Pro	Asp	Gln	Ala	Leu	Phe	Pro	Glu	Phe	Pro	Gly	Leu	Ser	Leu	Asn
		35					40					45			
Gly	Leu	Lys	Lys	Thr	Asn	Ala	Asp	Arg	Ala	Glu	Glu	Val	Leu	Leu	Gln
	50				55						60				
Lys	Ala	Glu	Ala	Leu	Ala	Glu	Val	Leu	Asp	Pro	Gln	Asn	Arg	Glu	Ser
65					70				75					80	
Arg	Ser	Pro	Arg	Arg	Cys	Val	Arg	Leu	His	Glu	Ser	Cys	Leu	Gly	Gln
				85					90					95	
Gln	Val	Pro	Cys	Cys	Asp	Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe	Phe
			100					105					110		
Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	Thr	Ala	Met	Asn	Leu	Cys
		115					120					125			
Ser	Arg	Thr	Met	Ser	Ile	Glu	Asn	Asn	Ile	Leu	Ile	Gly	Pro	Pro	Pro
	130				135						140				
Tyr	Tyr	Pro	Leu	Glu	Glu	Gly	Thr	Ala	Gly	Glu	Gln	Leu	His	Arg	Ala
145				150					155						160
Ile	Ser	Arg	Tyr	Ala	Ala	Val	Pro	Gly	Thr	Leu	Ala	Tyr	Thr	Asp	Val
				165					170					175	
His	Thr	Glu	Leu	Glu	Val	Thr	Tyr	Lys	Glu	Phe	Leu	Asp	Val	Thr	Cys
			180					185					190		
Arg	Leu	Ala	Glu	Ala	Met	Lys	Asn	Tyr	Gly	Leu	Gly	Leu	Gln	His	Thr
		195					200					205			
Ile	Ser	Val	Cys	Ser	Glu	Asn	Cys	Val	Gln	Phe	Phe	Met	Pro	Ile	Cys
	210				215						220				
Ala	Ala	Leu	Tyr	Val	Gly	Val	Ala	Thr	Ala	Pro	Thr	Asn	Asp	Ile	Tyr
225					230				235						240
Asn	Glu	Arg	Glu	Leu	Tyr	Asn	Ser	Leu	Ser	Ile	Ser	Gln	Pro	Thr	Val
				245					250					255	
Val	Phe	Thr	Ser	Arg	Asn	Ser	Leu	Gln	Lys	Ile	Leu	Gly	Val	Gln	Ser
			260					265					270		
Arg	Leu	Pro	Ile	Ile	Lys	Lys	Ile	Ile	Ile	Leu	Asp	Gly	Lys	Lys	Asp
			275				280					285			
Tyr	Leu	Gly	Tyr	Gln	Ser	Met	Gln	Ser	Phe	Met	Lys	Glu	His	Val	Pro
	290				295						300				
Ala	Asn	Phe	Asn	Val	Ser	Ala	Phe	Lys	Pro	Leu	Ser	Phe	Asp	Leu	Asp
305					310					315					320
Arg	Val	Ala	Cys	Ile	Met	Asn	Ser	Ser	Gly	Ser	Thr	Gly	Leu	Pro	Lys
				325					330					335	
Gly	Val	Pro	Ile	Ser	His	Arg	Asn	Thr	Ile	Tyr	Arg	Phe	Ser	His	Cys
			340					345					350		
Arg	Asp	Pro	Val	Phe	Gly	Asn	Gln	Ile	Ile	Pro	Asp	Thr	Thr	Ile	Leu
		355					360					365			
Cys	Ala	Val	Pro	Phe	His	His	Ala	Phe	Gly	Thr	Phe	Thr	Asn	Leu	Gly
	370				375						380				
Tyr	Leu	Ile	Cys	Gly	Phe	His	Val	Val	Leu	Met	Tyr	Arg	Phe	Asn	Glu
385					390					395					400

His Leu Phe Leu Gln Thr Leu Gln Asp Tyr Lys Cys Gln Ser Ala Leu  
 405 410 415  
 Leu Val Pro Thr Val Leu Ala Phe Leu Ala Lys Asn Pro Leu Val Asp  
 420 425 430  
 Lys Tyr Asp Leu Ser Asn Leu His Glu Ile Ala Ser Gly Gly Ala Pro  
 435 440 445  
 Leu Ser Lys Glu Ile Ser Glu Ile Ala Ala Lys Arg Phe Lys Leu Pro  
 450 455 460  
 Gly Ile Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Cys Ala Ile Val  
 465 470 475 480  
 Ile Thr Ala Glu Gly Glu Phe Lys Leu Gly Ala Val Gly Lys Val Val  
 485 490 495  
 Pro Phe Tyr Ser Leu Lys Val Leu Asp Leu Asn Thr Gly Lys Lys Leu  
 500 505 510  
 Gly Pro Asn Glu Arg Gly Glu Ile Cys Phe Lys Gly Pro Met Ile Met  
 515 520 525  
 Lys Gly Tyr Ile Asn Asn Pro Glu Ala Thr Arg Glu Leu Ile Asp Glu  
 530 535 540  
 Glu Gly Trp Ile His Ser Gly Asp Ile Gly Tyr Phe Asp Glu Asp Gly  
 545 550 555 560  
 His Val Tyr Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly  
 565 570 575  
 Tyr Gln Val Pro Pro Ala Glu Leu Glu Ala Leu Leu Leu Gln His Pro  
 580 585 590  
 Phe Ile Glu Asp Ala Gly Val Ala Gly Val Pro Asp Glu Val Ala Gly  
 595 600 605  
 Asp Leu Pro Gly Ala Val Val Val Leu Lys Glu Gly Lys Ser Ile Thr  
 610 615 620  
 Glu Lys Glu Ile Gln Asp Tyr Val Ala Gly Gln Val Thr Ser Ser Lys  
 625 630 635 640  
 Lys Leu Arg Gly Gly Val Glu Phe Val Lys Glu Val Pro Lys Gly Phe  
 645 650 655  
 Thr Gly Lys Ile Asp Thr Arg Lys Ile Lys Glu Ile Leu Ile Lys Ala  
 660 665 670  
 Gln Lys Gly Lys Ser Lys Ser Lys Ala Lys Leu  
 675 680

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 <211> 605  
 <212> PRT  
 <213> Human

<400> 15  
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 Ala Thr Arg Gly Ala Gln Met Gly Leu Ala Leu Gln Asp Arg Glu Pro  
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 Arg Ser Ser Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln  
 35 40 45  
 Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe Phe  
 50 55 60  
 Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Pro Cys  
 65 70 75 80  
 Ser Arg Thr Leu Val Pro Arg Gly Ser Gly Ser Ile Ile Pro Val Glu  
 85 90 95  
 Glu Glu Asn Pro Asp Phe Trp Asn Arg Gln Ala Ala Glu Ala Leu Gly  
 100 105 110  
 Ala Ala Lys Lys Leu Gln Pro Ala Gln Thr Ala Ala Lys Asn Leu Ile  
 115 120 125  
 Ile Phe Leu Gly Asp Gly Met Gly Val Ser Thr Val Thr Ala Ala Arg  
 130 135 140  
 Ile Leu Lys Gly Gln Lys Lys Asp Lys Leu Gly Pro Glu Thr Phe Leu

145	Ala	Met	Asp	Arg	Phe	Pro	Tyr	Val	Ala	Leu	Ser	Lys	Thr	Tyr	Ser	Val
					165					170					175	
Asp	Lys	His	Val	Pro	Asp	Ser	Gly	Ala	Thr	Ala	Thr	Ala	Tyr	Leu	Cys	
			180					185						190		
Gly	Val	Lys	Gly	Asn	Phe	Gln	Thr	Ile	Gly	Leu	Ser	Ala	Ala	Ala	Arg	
		195					200					205				
Phe	Asn	Gln	Cys	Asn	Thr	Thr	Arg	Gly	Asn	Glu	Val	Ile	Ser	Val	Met	
	210					215					220					
Asn	Arg	Ala	Lys	Lys	Ala	Gly	Lys	Ser	Val	Gly	Val	Val	Thr	Thr	Thr	
225					230					235					240	
Arg	Val	Gln	His	Ala	Ser	Pro	Ala	Gly	Ala	Tyr	Ala	His	Thr	Val	Asn	
				245					250					255		
Arg	Asn	Trp	Tyr	Ser	Asp	Ala	Asp	Val	Pro	Ala	Ser	Ala	Arg	Gln	Glu	
			260					265					270			
Gly	Cys	Gln	Asp	Ile	Ala	Thr	Gln	Leu	Ile	Ser	Asn	Met	Asp	Ile	Asp	
		275					280					285				
Val	Ile	Leu	Gly	Gly	Gly	Arg	Lys	Tyr	Met	Phe	Pro	Met	Gly	Thr	Pro	
	290					295					300					
Asp	Pro	Glu	Tyr	Pro	Asp	Asp	Tyr	Ser	Gln	Gly	Gly	Thr	Arg	Leu	Asp	
305					310					315					320	
Gly	Lys	Asn	Leu	Val	Gln	Glu	Trp	Leu	Ala	Lys	His	Gln	Gly	Ala	Arg	
				325					330					335		
Tyr	Val	Trp	Asn	Arg	Thr	Glu	Leu	Met	Gln	Ala	Ser	Leu	Asp	Pro	Ser	
			340					345					350			
Val	Thr	His	Leu	Met	Gly	Leu	Phe	Glu	Pro	Gly	Asp	Met	Lys	Tyr	Glu	
		355					360					365				
Ile	His	Arg	Asp	Ser	Thr	Leu	Asp	Pro	Ser	Leu	Met	Glu	Met	Thr	Glu	
	370					375					380					
Ala	Ala	Leu	Arg	Leu	Leu	Ser	Arg	Asn	Pro	Arg	Gly	Phe	Phe	Leu	Phe	
385					390					395					400	
Val	Glu	Gly	Gly	Arg	Ile	Asp	His	Gly	His	His	Glu	Ser	Arg	Ala	Tyr	
				405					410					415		
Arg	Ala	Leu	Thr	Glu	Thr	Ile	Met	Phe	Asp	Asp	Ala	Ile	Glu	Arg	Ala	
			420					425					430			
Gly	Gln	Leu	Thr	Ser	Glu	Glu	Asp	Thr	Leu	Ser	Leu	Val	Thr	Ala	Asp	
		435					440					445				
His	Ser	His	Val	Phe	Ser	Phe	Gly	Gly	Tyr	Pro	Leu	Arg	Gly	Ser	Ser	
	450					455					460					
Ile	Phe	Gly	Leu	Ala	Pro	Gly	Lys	Ala	Arg	Asp	Arg	Lys	Ala	Tyr	Thr	
465					470					475					480	
Val	Leu	Leu	Tyr	Gly	Asn	Gly	Pro	Gly	Tyr	Val	Leu	Lys	Asp	Gly	Ala	
				485					490					495		
Arg	Pro	Asp	Val	Thr	Glu	Ser	Glu	Ser	Gly	Ser	Pro	Glu	Tyr	Arg	Gln	
			500					505					510			
Gln	Ser	Ala	Val	Pro	Leu	Asp	Gly	Glu	Thr	His	Ala	Gly	Glu	Asp	Val	
		515					520					525				
Ala	Val	Phe	Ala	Arg	Gly	Pro	Gln	Ala	His	Leu	Val	His	Gly	Val	Gln	
	530					535					540					
Glu	Gln	Thr	Phe	Ile	Ala	His	Val	Met	Ala	Phe	Ala	Ala	Cys	Leu	Glu	
545					550					555					560	
Pro	Tyr	Thr	Ala	Cys	Asp	Leu	Ala	Pro	Ser	Ala	Gly	Thr	Thr	Asp	Ala	
				565					570					575		
Ala	His	Pro	Gly	Lys	Leu	Gly	Pro	Glu	Gln	Lys	Leu	Ile	Ser	Glu	Glu	
			580					585					590			
Asp	Leu	Asn	Ser	Ala	Val	Asp	His	His	His	His	His	His	His	His	His	
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<210> 16  
 <211> 666  
 <212> PRT  
 <213> Human

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<400> 16
Met Leu Thr Ala Ala Leu Leu Ser Cys Ala Leu Leu Leu Ala Leu Pro
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20      25      30
Arg Ser Ser Arg Arg Cys Val Arg Leu His Glu Ser Cys Leu Gly Gln
35      40      45
Gln Val Pro Cys Cys Asp Pro Cys Ala Thr Cys Tyr Cys Arg Phe Phe
50      55      60
Asn Ala Phe Cys Tyr Cys Arg Lys Leu Gly Thr Ala Met Asn Pro Cys
65      70      75      80
Ser Arg Thr Leu Val Pro Arg Gly Ser Gly Ser Met Ser Ile Glu Asn
85      90      95
Asn Ile Leu Ile Gly Pro Pro Pro Tyr Tyr Pro Leu Glu Glu Gly Thr
100      105      110
Ala Gly Glu Gln Leu His Arg Ala Ile Ser Arg Tyr Ala Ala Val Pro
115      120      125
Gly Thr Leu Ala Tyr Thr Asp Val His Thr Glu Leu Glu Val Thr Tyr
130      135      140
Lys Glu Phe Leu Asp Val Thr Cys Arg Leu Ala Glu Ala Met Lys Asn
145      150      155      160
Tyr Gly Leu Gly Leu Gln His Thr Ile Ser Val Cys Ser Glu Asn Cys
165      170      175
Val Gln Phe Phe Met Pro Ile Cys Ala Ala Leu Tyr Val Gly Val Ala
180      185      190
Thr Ala Pro Thr Asn Asp Ile Tyr Asn Glu Arg Glu Leu Tyr Asn Ser
195      200      205
Leu Ser Ile Ser Gln Pro Thr Val Val Phe Thr Ser Arg Asn Ser Leu
210      215      220
Gln Lys Ile Leu Gly Val Gln Ser Arg Leu Pro Ile Ile Lys Lys Ile
225      230      235      240
Ile Ile Leu Asp Gly Lys Lys Asp Tyr Leu Gly Tyr Gln Ser Met Gln
245      250      255
Ser Phe Met Lys Glu His Val Pro Ala Asn Phe Asn Val Ser Ala Phe
260      265      270
Lys Pro Leu Ser Phe Asp Leu Asp Arg Val Ala Cys Ile Met Asn Ser
275      280      285
Ser Gly Ser Thr Gly Leu Pro Lys Gly Val Pro Ile Ser His Arg Asn
290      295      300
Thr Ile Tyr Arg Phe Ser His Cys Arg Asp Pro Val Phe Gly Asn Gln
305      310      315      320
Ile Ile Pro Asp Thr Thr Ile Leu Cys Ala Val Pro Phe His His Ala
325      330      335
Phe Gly Thr Phe Thr Asn Leu Gly Tyr Leu Ile Cys Gly Phe His Val
340      345      350
Val Leu Met Tyr Arg Phe Asn Glu His Leu Phe Leu Gln Thr Leu Gln
355      360      365
Asp Tyr Lys Cys Gln Ser Ala Leu Leu Val Pro Thr Val Leu Ala Phe
370      375      380
Leu Ala Lys Asn Pro Leu Val Asp Lys Tyr Asp Leu Ser Asn Leu His
385      390      395      400
Glu Ile Ala Ser Gly Gly Ala Pro Leu Ser Lys Glu Ile Ser Glu Ile
405      410      415
Ala Ala Lys Arg Phe Lys Leu Pro Gly Ile Arg Gln Gly Tyr Gly Leu
420      425      430
Thr Glu Thr Thr Cys Ala Ile Val Ile Thr Ala Glu Gly Glu Phe Lys
435      440      445
Leu Gly Ala Val Gly Lys Val Val Pro Phe Tyr Ser Leu Lys Val Leu
450      455      460
Asp Leu Asn Thr Gly Lys Lys Leu Gly Pro Asn Glu Arg Gly Glu Ile
465      470      475      480

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Cys	Phe	Lys	Gly	Pro	Met	Ile	Met	Lys	Gly	Tyr	Ile	Asn	Asn	Pro	Glu
				485					490					495	
Ala	Thr	Arg	Glu	Leu	Ile	Asp	Glu	Glu	Gly	Trp	Ile	His	Ser	Gly	Asp
			500					505					510		
Ile	Gly	Tyr	Phe	Asp	Glu	Asp	Gly	His	Val	Tyr	Ile	Val	Asp	Arg	Leu
		515					520					525			
Lys	Ser	Leu	Ile	Lys	Tyr	Lys	Gly	Tyr	Gln	Val	Pro	Pro	Ala	Glu	Leu
	530					535					540				
Glu	Ala	Leu	Leu	Leu	Gln	His	Pro	Phe	Ile	Glu	Asp	Ala	Gly	Val	Ala
545					550					555					560
Gly	Val	Pro	Asp	Glu	Val	Ala	Gly	Asp	Leu	Pro	Gly	Ala	Val	Val	Val
				565					570					575	
Leu	Lys	Glu	Gly	Lys	Ser	Ile	Thr	Glu	Lys	Glu	Ile	Gln	Asp	Tyr	Val
			580					585					590		
Ala	Gly	Gln	Val	Thr	Ser	Ser	Lys	Lys	Leu	Arg	Gly	Gly	Val	Glu	Phe
		595					600					605			
Val	Lys	Glu	Val	Pro	Lys	Gly	Phe	Thr	Gly	Lys	Ile	Asp	Thr	Arg	Lys
	610					615					620				
Ile	Lys	Glu	Ile	Leu	Ile	Lys	Ala	Gln	Lys	Gly	Lys	Ser	Lys	Ser	Lys
625					630					635					640
Ala	Lys	Leu	Gly	Pro	Glu	Gln	Lys	Leu	Ile	Ser	Glu	Glu	Asp	Leu	Asn
				645					650					655	
Ser	Ala	Val	Asp	His	His	His	His	His	His						
			660					665							

<210> 17  
 <211> 621  
 <212> PRT  
 <213> Human

<400> 17

Met	Leu	Thr	Ala	Ala	Leu	Leu	Ser	Cys	Ala	Leu	Leu	Leu	Ala	Leu	Pro
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Ala	Thr	Arg	Gly	Ala	Gln	Met	Gly	Leu	Ala	Pro	Met	Glu	Gly	Ile	Arg
			20					25					30		
Arg	Pro	Asp	Gln	Ala	Leu	Leu	Pro	Glu	Leu	Pro	Gly	Leu	Gly	Leu	Arg
		35					40					45			
Ala	Pro	Leu	Lys	Lys	Thr	Asn	Ala	Glu	Gln	Ala	Glu	Glu	Asp	Leu	Leu
	50					55					60				
Gln	Glu	Ala	Gln	Ala	Leu	Ala	Glu	Val	Leu	Asp	Leu	Gln	Asp	Arg	Glu
65					70				75					80	
Pro	Arg	Ser	Ser	Arg	Arg	Cys	Val	Arg	Leu	His	Glu	Ser	Cys	Leu	Gly
				85					90					95	
Gln	Gln	Val	Pro	Cys	Cys	Asp	Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe
			100					105					110		
Phe	Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	Thr	Ala	Met	Asn	Pro
		115					120					125			
Cys	Ser	Arg	Thr	Ile	Ile	Pro	Val	Glu	Glu	Glu	Asn	Pro	Asp	Phe	Trp
	130					135					140				
Asn	Arg	Gln	Ala	Ala	Glu	Ala	Leu	Gly	Ala	Ala	Lys	Lys	Leu	Gln	Pro
145					150					155					160
Ala	Gln	Thr	Ala	Ala	Lys	Asn	Leu	Ile	Ile	Phe	Leu	Gly	Asp	Gly	Met
				165					170					175	
Gly	Val	Ser	Thr	Val	Thr	Ala	Ala	Arg	Ile	Leu	Lys	Gly	Gln	Lys	Lys
			180					185					190		
Asp	Lys	Leu	Gly	Pro	Glu	Thr	Phe	Leu	Ala	Met	Asp	Arg	Phe	Pro	Tyr
		195					200					205			
Val	Ala	Leu	Ser	Lys	Thr	Tyr	Ser	Val	Asp	Lys	His	Val	Pro	Asp	Ser
	210					215					220				
Gly	Ala	Thr	Ala	Thr	Ala	Tyr	Leu	Cys	Gly	Val	Lys	Gly	Asn	Phe	Gln
225					230					235					240
Thr	Ile	Gly	Leu	Ser	Ala	Ala	Ala	Arg	Phe	Asn	Gln	Cys	Asn	Thr	Thr

Arg	Gly	Asn	Glu	Val	Ile	Ser	Val	Met	Asn	Arg	Ala	Lys	Lys	Ala	Gly
			260					265					270		
Lys	Ser	Val	Gly	Val	Val	Thr	Thr	Thr	Arg	Val	Gln	His	Ala	Ser	Pro
		275					280					285			
Ala	Gly	Ala	Tyr	Ala	His	Thr	Val	Asn	Arg	Asn	Trp	Tyr	Ser	Asp	Ala
	290					295					300				
Asp	Val	Pro	Ala	Ser	Ala	Arg	Gln	Glu	Gly	Cys	Gln	Asp	Ile	Ala	Thr
305					310					315					320
Gln	Leu	Ile	Ser	Asn	Met	Asp	Ile	Asp	Val	Ile	Leu	Gly	Gly	Gly	Arg
				325					330					335	
Lys	Tyr	Met	Phe	Pro	Met	Gly	Thr	Pro	Asp	Pro	Glu	Tyr	Pro	Asp	Asp
			340					345					350		
Tyr	Ser	Gln	Gly	Gly	Thr	Arg	Leu	Asp	Gly	Lys	Asn	Leu	Val	Gln	Glu
		355					360					365			
Trp	Leu	Ala	Lys	His	Gln	Gly	Ala	Arg	Tyr	Val	Trp	Asn	Arg	Thr	Glu
	370					375					380				
Leu	Met	Gln	Ala	Ser	Leu	Asp	Pro	Ser	Val	Thr	His	Leu	Met	Gly	Leu
385					390					395					400
Phe	Glu	Pro	Gly	Asp	Met	Lys	Tyr	Glu	Ile	His	Arg	Asp	Ser	Thr	Leu
				405					410					415	
Asp	Pro	Ser	Leu	Met	Glu	Met	Thr	Glu	Ala	Ala	Leu	Arg	Leu	Leu	Ser
			420					425					430		
Arg	Asn	Pro	Arg	Gly	Phe	Phe	Leu	Phe	Val	Glu	Gly	Gly	Arg	Ile	Asp
		435					440					445			
His	Gly	His	His	Glu	Ser	Arg	Ala	Tyr	Arg	Ala	Leu	Thr	Glu	Thr	Ile
	450					455					460				
Met	Phe	Asp	Asp	Ala	Ile	Glu	Arg	Ala	Gly	Gln	Leu	Thr	Ser	Glu	Glu
465					470					475					480
Asp	Thr	Leu	Ser	Leu	Val	Thr	Ala	Asp	His	Ser	His	Val	Phe	Ser	Phe
				485					490					495	
Gly	Gly	Tyr	Pro	Leu	Arg	Gly	Ser	Ser	Ile	Phe	Gly	Leu	Ala	Pro	Gly
			500					505					510		
Lys	Ala	Arg	Asp	Arg	Lys	Ala	Tyr	Thr	Val	Leu	Leu	Tyr	Gly	Asn	Gly
		515					520					525			
Pro	Gly	Tyr	Val	Leu	Lys	Asp	Gly	Ala	Arg	Pro	Asp	Val	Thr	Glu	Ser
	530					535					540				
Glu	Ser	Gly	Ser	Pro	Glu	Tyr	Arg	Gln	Gln	Ser	Ala	Val	Pro	Leu	Asp
545					550					555					560
Gly	Glu	Thr	His	Ala	Gly	Glu	Asp	Val	Ala	Val	Phe	Ala	Arg	Gly	Pro
				565					570					575	
Gln	Ala	His	Leu	Val	His	Gly	Val	Gln	Glu	Gln	Thr	Phe	Ile	Ala	His
			580					585					590		
Val	Met	Ala	Phe	Ala	Ala	Cys	Leu	Glu	Pro	Tyr	Thr	Ala	Cys	Asp	Leu
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Ala	Pro	Ser	Ala	Gly	Thr	Thr	Asp	Ala	Ala	His	Pro	Gly			
	610					615					620				

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 <212> PRT  
 <213> Human

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 Arg Pro Asp Gln Ala Leu Leu Pro Glu Leu Pro Gly Leu Gly Leu Arg  
 35 40 45  
 Ala Pro Leu Lys Lys Thr Asn Ala Glu Gln Ala Glu Glu Asp Leu Leu  
 50 55 60

Gln	Glu	Ala	Gln	Ala	Leu	Ala	Glu	Val	Leu	Asp	Leu	Gln	Asp	Arg	Glu
65					70					75					80
Pro	Arg	Ser	Ser	Arg	Arg	Cys	Val	Arg	Leu	His	Glu	Ser	Cys	Leu	Gly
				85					90					95	
Gln	Gln	Val	Pro	Cys	Cys	Asp	Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe
			100					105					110		
Phe	Asn	Ala	Phe	Cys	Tyr	Cys	Arg	Lys	Leu	Gly	Thr	Ala	Met	Asn	Pro
		115					120					125			
Cys	Ser	Arg	Thr	Met	Ser	Ile	Glu	Asn	Asn	Ile	Leu	Ile	Gly	Pro	Pro
		130				135					140				
Pro	Tyr	Tyr	Pro	Leu	Glu	Glu	Gly	Thr	Ala	Gly	Glu	Gln	Leu	His	Arg
145				150						155					160
Ala	Ile	Ser	Arg	Tyr	Ala	Ala	Val	Pro	Gly	Thr	Leu	Ala	Tyr	Thr	Asp
				165					170					175	
Val	His	Thr	Glu	Leu	Glu	Val	Thr	Tyr	Lys	Glu	Phe	Leu	Asp	Val	Thr
			180					185					190		
Cys	Arg	Leu	Ala	Glu	Ala	Met	Lys	Asn	Tyr	Gly	Leu	Gly	Leu	Gln	His
		195					200					205			
Thr	Ile	Ser	Val	Cys	Ser	Glu	Asn	Cys	Val	Gln	Phe	Phe	Met	Pro	Ile
	210					215					220				
Cys	Ala	Ala	Leu	Tyr	Val	Gly	Val	Ala	Thr	Ala	Pro	Thr	Asn	Asp	Ile
225				230					235						240
Tyr	Asn	Glu	Arg	Glu	Leu	Tyr	Asn	Ser	Leu	Ser	Ile	Ser	Gln	Pro	Thr
				245					250					255	
Val	Val	Phe	Thr	Ser	Arg	Asn	Ser	Leu	Gln	Lys	Ile	Leu	Gly	Val	Gln
			260					265					270		
Ser	Arg	Leu	Pro	Ile	Ile	Lys	Lys	Ile	Ile	Ile	Leu	Asp	Gly	Lys	Lys
		275					280					285			
Asp	Tyr	Leu	Gly	Tyr	Gln	Ser	Met	Gln	Ser	Phe	Met	Lys	Glu	His	Val
	290					295					300				
Pro	Ala	Asn	Phe	Asn	Val	Ser	Ala	Phe	Lys	Pro	Leu	Ser	Phe	Asp	Leu
305				310						315					320
Asp	Arg	Val	Ala	Cys	Ile	Met	Asn	Ser	Ser	Gly	Ser	Thr	Gly	Leu	Pro
				325					330					335	
Lys	Gly	Val	Pro	Ile	Ser	His	Arg	Asn	Thr	Ile	Tyr	Arg	Phe	Ser	His
			340					345					350		
Cys	Arg	Asp	Pro	Val	Phe	Gly	Asn	Gln	Ile	Ile	Pro	Asp	Thr	Thr	Ile
		355					360					365			
Leu	Cys	Ala	Val	Pro	Phe	His	His	Ala	Phe	Gly	Thr	Phe	Thr	Asn	Leu
	370					375					380				
Gly	Tyr	Leu	Ile	Cys	Gly	Phe	His	Val	Val	Leu	Met	Tyr	Arg	Phe	Asn
385				390						395					400
Glu	His	Leu	Phe	Leu	Gln	Thr	Leu	Gln	Asp	Tyr	Lys	Cys	Gln	Ser	Ala
				405					410					415	
Leu	Leu	Val	Pro	Thr	Val	Leu	Ala	Phe	Leu	Ala	Lys	Asn	Pro	Leu	Val
			420					425					430		
Asp	Lys	Tyr	Asp	Leu	Ser	Asn	Leu	His	Glu	Ile	Ala	Ser	Gly	Gly	Ala
		435					440					445			
Pro	Leu	Ser	Lys	Glu	Ile	Ser	Glu	Ile	Ala	Ala	Lys	Arg	Phe	Lys	Leu
		450				455					460				
Pro	Gly	Ile	Arg	Gln	Gly	Tyr	Gly	Leu	Thr	Glu	Thr	Thr	Cys	Ala	Ile
465				470						475					480
Val	Ile	Thr	Ala	Glu	Gly	Glu	Phe	Lys	Leu	Gly	Ala	Val	Gly	Lys	Val
				485					490					495	
Val	Pro	Phe	Tyr	Ser	Leu	Lys	Val	Leu	Asp	Leu	Asn	Thr	Gly	Lys	Lys
			500					505					510		
Leu	Gly	Pro	Asn	Glu	Arg	Gly	Glu	Ile	Cys	Phe	Lys	Gly	Pro	Met	Ile
		515					520					525			
Met	Lys	Gly	Tyr	Ile	Asn	Asn	Pro	Glu	Ala	Thr	Arg	Glu	Leu	Ile	Asp
	530					535					540				
Glu	Glu	Gly	Trp	Ile	His	Ser	Gly	Asp	Ile	Gly	Tyr	Phe	Asp	Glu	Asp
545					550					555					560

Gly	His	Val	Tyr	Ile 565	Val	Asp	Arg	Leu	Lys 570	Ser	Leu	Ile	Lys	Tyr 575	Lys
Gly	Tyr	Gln	Val	Pro 580	Pro	Ala	Glu	Leu	Glu 585	Ala	Leu	Leu	Leu	Gln 590	His
Pro	Phe	Ile 595	Glu	Asp	Ala	Gly	Val 600	Ala	Gly	Val	Pro	Asp 605	Glu	Val	Ala
Gly	Asp 610	Leu	Pro	Gly	Ala	Val 615	Val	Val	Leu	Lys	Glu 620	Gly	Lys	Ser	Ile
Thr 625	Glu	Lys	Glu	Ile 630	Gln	Asp	Tyr	Val	Ala	Gly 635	Gln	Val	Thr	Ser	Ser 640
Lys	Lys	Leu	Arg	Gly 645	Gly	Val	Glu	Phe	Val 650	Lys	Glu	Val	Pro	Lys 655	Gly
Phe	Thr	Gly	Lys 660	Ile	Asp	Thr	Arg	Lys 665	Ile	Lys	Glu	Ile	Leu 670	Ile	Lys
Ala	Gln	Lys 675	Gly	Lys	Ser	Lys	Ser 680	Lys	Ala	Lys	Leu				

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<212>	PRT
<213>	Human

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Met	Leu	Thr	Ala	Ala	Leu	Leu	Ser	Cys	Ala	Leu	Leu	Leu	Ala	Leu	Pro
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			20					25					30		
Glu	Asn	Pro	Asp	Phe	Trp	Asn	Arg	Gln	Ala	Ala	Glu	Ala	Leu	Gly	Ala
		35					40					45			
Ala	Lys	Lys	Leu	Gln	Pro	Ala	Gln	Thr	Ala	Ala	Lys	Asn	Leu	Ile	Ile
	50					55					60				
Phe	Leu	Gly	Asp	Gly	Met	Gly	Val	Ser	Thr	Val	Thr	Ala	Ala	Arg	Ile
65					70					75				80	
Leu	Lys	Gly	Gln	Lys	Lys	Asp	Lys	Leu	Gly	Pro	Glu	Thr	Phe	Leu	Ala
				85					90					95	
Met	Asp	Arg	Phe	Pro	Tyr	Val	Ala	Leu	Ser	Lys	Thr	Tyr	Ser	Val	Asp
			100					105					110		
Lys	His	Val	Pro	Asp	Ser	Gly	Ala	Thr	Ala	Thr	Ala	Tyr	Leu	Cys	Gly
		115					120					125			
Val	Lys	Gly	Asn	Phe	Gln	Thr	Ile	Gly	Leu	Ser	Ala	Ala	Ala	Arg	Phe
	130					135					140				
Asn	Gln	Cys	Asn	Thr	Thr	Arg	Gly	Asn	Glu	Val	Ile	Ser	Val	Met	Asn
145				150					155					160	
Arg	Ala	Lys	Lys	Ala	Gly	Lys	Ser	Val	Gly	Val	Val	Thr	Thr	Thr	Arg
				165					170					175	
Val	Gln	His	Ala	Ser	Pro	Ala	Gly	Ala	Tyr	Ala	His	Thr	Val	Asn	Arg
			180					185					190		
Asn	Trp	Tyr	Ser	Asp	Ala	Asp	Val	Pro	Ala	Ser	Ala	Arg	Gln	Glu	Gly
		195				200						205			
Cys	Gln	Asp	Ile	Ala	Thr	Gln	Leu	Ile	Ser	Asn	Met	Asp	Ile	Asp	Val
	210					215					220				
Ile	Leu	Gly	Gly	Gly	Arg	Lys	Tyr	Met	Phe	Pro	Met	Gly	Thr	Pro	Asp
225					230				235					240	
Pro	Glu	Tyr	Pro	Asp	Asp	Tyr	Ser	Gln	Gly	Gly	Thr	Arg	Leu	Asp	Gly
				245					250					255	
Lys	Asn	Leu	Val	Gln	Glu	Trp	Leu	Ala	Lys	His	Gln	Gly	Ala	Arg	Tyr
			260					265					270		
Val	Trp	Asn	Arg	Thr	Glu	Leu	Met	Gln	Ala	Ser	Leu	Asp	Pro	Ser	Val
		275					280					285			
Thr	His	Leu	Met	Gly	Leu	Phe	Glu	Pro	Gly	Asp	Met	Lys	Tyr	Glu	Ile
	290					295					300				
His	Arg	Asp	Ser	Thr	Leu	Asp	Pro	Ser	Leu	Met	Glu	Met	Thr	Glu	Ala



305					310					315				320
Ala	Leu	Arg	Leu	Leu	Ser	Arg	Asn	Pro	Arg	Gly	Phe	Phe	Leu	Phe
				325					330					335
Glu	Gly	Gly	Arg	Ile	Asp	His	Gly	His	His	Glu	Ser	Arg	Ala	Tyr
			340					345					350	
Ala	Leu	Thr	Glu	Thr	Ile	Met	Phe	Asp	Asp	Ala	Ile	Glu	Arg	Ala
		355					360					365		
Gln	Leu	Thr	Ser	Glu	Glu	Asp	Thr	Leu	Ser	Leu	Val	Thr	Ala	Asp
	370					375					380			
Ser	His	Val	Phe	Ser	Phe	Gly	Gly	Tyr	Pro	Leu	Arg	Gly	Ser	Ser
385					390					395				400
Phe	Gly	Leu	Ala	Pro	Gly	Lys	Ala	Arg	Asp	Arg	Lys	Ala	Tyr	Thr
			405						410					415
Leu	Leu	Tyr	Gly	Asn	Gly	Pro	Gly	Tyr	Val	Leu	Lys	Asp	Gly	Ala
			420					425					430	
Pro	Asp	Val	Thr	Glu	Ser	Glu	Ser	Gly	Ser	Pro	Glu	Tyr	Arg	Gln
		435					440					445		
Ser	Ala	Val	Pro	Leu	Asp	Gly	Glu	Thr	His	Ala	Gly	Glu	Asp	Val
	450					455					460			
Val	Phe	Ala	Arg	Gly	Pro	Gln	Ala	His	Leu	Val	His	Gly	Val	Gln
465				470						475				480
Gln	Thr	Phe	Ile	Ala	His	Val	Met	Ala	Phe	Ala	Ala	Cys	Leu	Glu
			485						490					495
Tyr	Thr	Ala	Cys	Asp	Leu	Ala	Pro	Ser	Ala	Gly	Thr	Thr	Asp	Ala
			500					505					510	
His	Pro	Gly	Pro	Met	Glu	Gly	Ile	Arg	Arg	Pro	Asp	Gln	Ala	Leu
		515					520					525		
Pro	Glu	Leu	Pro	Gly	Leu	Gly	Leu	Arg	Ala	Pro	Leu	Lys	Lys	Thr
		530				535					540			
Ala	Glu	Gln	Ala	Glu	Glu	Asp	Leu	Leu	Gln	Glu	Ala	Gln	Ala	Leu
545					550					555				560
Glu	Val	Leu	Asp	Leu	Gln	Asp	Arg	Glu	Pro	Arg	Ser	Ser	Arg	Cys
			565						570					575
Val	Arg	Leu	His	Glu	Ser	Cys	Leu	Gly	Gln	Gln	Val	Pro	Cys	Cys
			580					585					590	
Pro	Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe	Phe	Asn	Ala	Phe	Cys	Tyr
		595					600					605		
Arg	Lys	Leu	Gly	Thr	Ala	Met	Asn	Pro	Cys	Ser	Arg	Thr		
	610					615					620			

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 <213> Human

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Ala	Thr	Arg	Gly	Ala	Gln	Met	Gly	Leu	Ala	Met	Ser	Ile	Glu	Asn	Asn
			20					25					30		
Ile	Leu	Ile	Gly	Pro	Pro	Pro	Tyr	Tyr	Pro	Leu	Glu	Glu	Gly	Thr	Ala
		35					40					45			
Gly	Glu	Gln	Leu	His	Arg	Ala	Ile	Ser	Arg	Tyr	Ala	Ala	Val	Pro	Gly
	50					55					60				
Thr	Leu	Ala	Tyr	Thr	Asp	Val	His	Thr	Glu	Leu	Glu	Val	Thr	Tyr	Lys
65					70					75					80
Glu	Phe	Leu	Asp	Val	Thr	Cys	Arg	Leu	Ala	Glu	Ala	Met	Lys	Asn	Tyr
			85						90					95	
Gly	Leu	Gly	Leu	Gln	His	Thr	Ile	Ser	Val	Cys	Ser	Glu	Asn	Cys	Val
			100					105					110		
Gln	Phe	Phe	Met	Pro	Ile	Cys	Ala	Ala	Leu	Tyr	Val	Gly	Val	Ala	Thr
		115					120					125			

Ala	Pro	Thr	Asn	Asp	Ile	Tyr	Asn	Glu	Arg	Glu	Leu	Tyr	Asn	Ser	Leu
	130					135					140				
Ser	Ile	Ser	Gln	Pro	Thr	Val	Val	Phe	Thr	Ser	Arg	Asn	Ser	Leu	Gln
145						150				155					160
Lys	Ile	Leu	Gly	Val	Gln	Ser	Arg	Leu	Pro	Ile	Ile	Lys	Lys	Ile	Ile
					165				170					175	
Ile	Leu	Asp	Gly	Lys	Lys	Asp	Tyr	Leu	Gly	Tyr	Gln	Ser	Met	Gln	Ser
			180					185					190		
Phe	Met	Lys	Glu	His	Val	Pro	Ala	Asn	Phe	Asn	Val	Ser	Ala	Phe	Lys
		195					200					205			
Pro	Leu	Ser	Phe	Asp	Leu	Asp	Arg	Val	Ala	Cys	Ile	Met	Asn	Ser	Ser
	210					215					220				
Gly	Ser	Thr	Gly	Leu	Pro	Lys	Gly	Val	Pro	Ile	Ser	His	Arg	Asn	Thr
225					230					235					240
Ile	Tyr	Arg	Phe	Ser	His	Cys	Arg	Asp	Pro	Val	Phe	Gly	Asn	Gln	Ile
				245					250					255	
Ile	Pro	Asp	Thr	Thr	Ile	Leu	Cys	Ala	Val	Pro	Phe	His	His	Ala	Phe
			260					265					270		
Gly	Thr	Phe	Thr	Asn	Leu	Gly	Tyr	Leu	Ile	Cys	Gly	Phe	His	Val	Val
		275					280					285			
Leu	Met	Tyr	Arg	Phe	Asn	Glu	His	Leu	Phe	Leu	Gln	Thr	Leu	Gln	Asp
	290					295					300				
Tyr	Lys	Cys	Gln	Ser	Ala	Leu	Leu	Val	Pro	Thr	Val	Leu	Ala	Phe	Leu
305					310					315					320
Ala	Lys	Asn	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser	Asn	Leu	His	Glu
				325					330					335	
Ile	Ala	Ser	Gly	Gly	Ala	Pro	Leu	Ser	Lys	Glu	Ile	Ser	Glu	Ile	Ala
			340					345					350		
Ala	Lys	Arg	Phe	Lys	Leu	Pro	Gly	Ile	Arg	Gln	Gly	Tyr	Gly	Leu	Thr
		355					360					365			
Glu	Thr	Thr	Cys	Ala	Ile	Val	Ile	Thr	Ala	Glu	Gly	Glu	Phe	Lys	Leu
	370					375					380				
Gly	Ala	Val	Gly	Lys	Val	Val	Pro	Phe	Tyr	Ser	Leu	Lys	Val	Leu	Asp
385					390					395					400
Leu	Asn	Thr	Gly	Lys	Lys	Leu	Gly	Pro	Asn	Glu	Arg	Gly	Glu	Ile	Cys
				405					410					415	
Phe	Lys	Gly	Pro	Met	Ile	Met	Lys	Gly	Tyr	Ile	Asn	Asn	Pro	Glu	Ala
			420					425					430		
Thr	Arg	Glu	Leu	Ile	Asp	Glu	Glu	Gly	Trp	Ile	His	Ser	Gly	Asp	Ile
		435				440						445			
Gly	Tyr	Phe	Asp	Glu	Asp	Gly	His	Val	Tyr	Ile	Val	Asp	Arg	Leu	Lys
	450					455					460				
Ser	Leu	Ile	Lys	Tyr	Lys	Gly	Tyr	Gln	Val	Pro	Pro	Ala	Glu	Leu	Glu
465					470					475					480
Ala	Leu	Leu	Leu	Gln	His	Pro	Phe	Ile	Glu	Asp	Ala	Gly	Val	Ala	Gly
				485					490					495	
Val	Pro	Asp	Glu	Val	Ala	Gly	Asp	Leu	Pro	Gly	Ala	Val	Val	Val	Leu
			500					505					510		
Lys	Glu	Gly	Lys	Ser	Ile	Thr	Glu	Lys	Glu	Ile	Gln	Asp	Tyr	Val	Ala
		515					520					525			
Gly	Gln	Val	Thr	Ser	Ser	Lys	Lys	Leu	Arg	Gly	Gly	Val	Glu	Phe	Val
	530					535					540				
Lys	Glu	Val	Pro	Lys	Gly	Phe	Thr	Gly	Lys	Ile	Asp	Thr	Arg	Lys	Ile
545					550					555					560
Lys	Glu	Ile	Leu	Ile	Lys	Ala	Gln	Lys	Gly	Lys	Ser	Lys	Ser	Lys	Ala
				565					570					575	
Lys	Leu	Pro	Met	Glu	Gly	Ile	Arg	Arg	Pro	Asp	Gln	Ala	Leu	Leu	Pro
			580					585					590		
Glu	Leu	Pro	Gly	Leu	Gly	Leu	Arg	Ala	Pro	Leu	Lys	Lys	Thr	Asn	Ala
		595					600					605			
Glu	Gln	Ala	Glu	Glu	Asp	Leu	Leu	Gln	Glu	Ala	Gln	Ala	Leu	Ala	Glu
	610					615					620				

Val	Leu	Asp	Leu	Gln	Asp	Arg	Glu	Pro	Arg	Ser	Ser	Arg	Arg	Cys	Val
625					630					635					640
Arg	Leu	His	Glu	Ser	Cys	Leu	Gly	Gln	Gln	Val	Pro	Cys	Cys	Asp	Pro
				645					650					655	
Cys	Ala	Thr	Cys	Tyr	Cys	Arg	Phe	Phe	Asn	Ala	Phe	Cys	Tyr	Cys	Arg
			660					665					670		
Lys	Leu	Gly	Thr	Ala	Met	Asn	Pro	Cys	Ser	Arg	Thr				
		675					680								

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37

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 <213> Human

<400> 22  
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20

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18

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 gtcgacggcg ctattcag

18